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U. S. Geological survey west of the 100th meridian, Washington, 1878, lichens p. 350.

New western lichens (Lecidea Brandegei, L. Pringlei, Acolium Sti. Jacobi, Pyrenothamnia Spraguei), *Bull. Torr. Bot. Club*, x. 21 (1883).

A new Ramalina (R. crinita), *Bull. Torr. Bot. Club*, x. 43 (1883).

Two lichens of the Pacific coast (Lecanora melanaspis Ach., Staurothele Brandegei Tuckerm.), *Bull. Torr. Bot. Club*, xi. 25 (1884). This was his last publication.

There may be one or two short papers on lichens in the *American Journal* which are not noticed here, but they are not important.

[We take the liberty of adding to the above list the following:

On Oakesia, a new genus of the order Empetreæ, Hooker's London *Jour. Bot.* i (1842), 443–447.

Enumeratio methodica Caricum quarundam, Schenectady, *Riggs*, 1843.—In a letter to Mr. Willey accompanying this the author says: "I send a brochure of mine upon CAREX written some 20 years since when I was tolerably familiar with the common species both of Europe and America * * * I collected in most parts of the north of Europe in 1841–2 and formed a large herbarium from my correspondents' gifts and exchanges, the whole of which I gave afterwards to Boott of London. Since his death the greater part of this has been returned to me." This little work is quite remarkable for its keen insight into the relationships of the numerous species of this difficult genus.

Observations on some N. England plants, with characters of several new species, *Am. Jour. Sci.* II. vi. (1848), 224–232.

Observations on some American species of Potamogeton, *Am. Jour. Sci.* II. vii (1849), 347–360.

Lichenes, Pacific R. R. Rept. vi. 94 (1857).—EDS.]

Revision of North American Hypericaceæ.—I.

JOHN M. COULTER.

Having studied the North American species of Hypericaceæ with all the material to be had at Cambridge, it seems to be proper, before putting the results into a more permanent shape, to present them to botanists for their criticism, that they may test them in the herbarium and field, and that the limitations of certain species may be better defined. It is with the earnest request that botanists will thoroughly examine this work during the coming season that this paper is presented, and any specimens which will correct either the characters or ranges given will be received as a great favor. Of course work done at the Harvard Herbarium is of itself an acknowledgment of the great courtesy that prevails there, and the patient criticism given to these pages by Dr. Gray has given to them probably their greatest value.

Our three genera may be grouped and characterized as follows:

* *Hypogynous glands none.*

1. **Ascyrum.** Sepals 4, very unequal, decussate; the two outer very broad and flat; the inner much smaller. Petals 4, oblique, convolute in æstivation, deciduous. Stamens numerous, distinct. Ovary one-celled, with 2 to 4 parietal placentæ: styles 2 to 4, distinct or united below: stigmas not capitate. Capsule ovoid.

2. **Hypericum.** Sepals 5 (rarely 4), similar. Petals 5 (rarely 4), oblique, convolute in æstivation, deciduous or marcescent. Stamens numerous (sometimes few), in 3 or 5 clusters: filaments distinct or united at the very base into phalanges. Ovary one-celled with parietal placentæ, or 3 to 5-celled with placentæ in the axis: styles 3 to 5, distinct or united even to the apex: stigmas often capitate. Capsule conical to globose.

* * *Hypogynous glands three.*

3. **Elodea.** Sepals 5, equal. Petals 5, equal-sided, imbricate in æstivation, deciduous. Stamens 9 (rarely more), strongly triadelphous; the large orange-colored glands alternating with the phalanges. Ovary 3-celled: styles 3, distinct: stigmas not capitate. Capsule elongated-oblong.

1. ASCYRUM L. ST. PETER'S-WORT.

Low suffruticose leafy plants; with small black-dotted leaves and nearly solitary light yellow flowers; pedicels bibracteolate.—Gen. 903; Torr. & Gray, Fl. i. 156 & 671; Gray, Gen. Ill. i. 211, t. 91; Benth. & Hook. Gen. Plant. i. 164, excl. syn. *Isophyllum.*—A genus of 5 species, peculiar to Eastern North America and the West Indies.

* Diffuse: branches somewhat two-edged and winged above: leaves narrowed at the base, not clasping: inner sepals very small (about half line long) or obsolete, petaloid: petals about as long as the outer sepals: styles two, distinct or united.

† Pedicels long (¼ to ½ inch), bibracteolate near the base: inner sepals obsolete or nearly so: styles as long as the ovary.

1. **A. pumilum** MICHX. Low (3 to 9 inches), with spreading branches: leaves linear-oblong to oval, sometimes spatulate or narrowly obovate, 2 to 4 lines long, about a line wide: pedicels becoming more or less reflexed: petals obovate, little longer than

the ovate, acute or obtuse outer sepals.—Fl. ii. 77; Torr. & Gray, Fl. i. 156.

A. pauciflorum Nutt. Gen. ii. 15; Chois. in DC. Prodr. i. 555.

Pine barrens of Georgia and Florida.

The specimens examined were all from Florida, collected by Canby, Chapman, Curtiss, and J. D. Smith. The original station given by Michaux is in Georgia, in which he is confirmed by Elliott and Nuttall, as well as by subsequent collections.

† † Pedicels shorter (a line or two), bibracteolate close to the flower: inner sepals evident: styles short.

2. **A. Crux-Andreæ** L. Low (half to a foot or less), much branched at base, generally decumbent: leaves narrowly obovate-oblong, ½ to 1½ inches long, 3 to 4 lines wide, more or less plainly biglandular at base: pedicels about a line long: outer sepals ovate or cordate-ovate, mostly obtuse: petals linear-oblong to narrowly obovate.—Spec. ed. 2, 1107, excl. Pluk. syn. (which is *Hypericum mutilum*), not ed. 1, 787, *fide* Torr. & Gray, Fl. i. 671; Chois. in DC. Prodr. i. 155; Torr. & Gray, Fl. i. 156, in part.

A. multicaule Michx. Fl. ii. 77.

From Nantucket, Mass., through the pine-barrens of New Jersey to Virginia, E. Texas, and S. Illinois.

The narrow-leaved forms south of this range should be referred to the following species, with which A. Crux-Andreæ has unfortunately been confounded. The western forms all seem to be taller and more robust than those of the Atlantic States. In reference to the confusion of the synonymy of A. Crux-Andreæ and A. hypericoides consult Torr. & Gray, Fl. i. 671, where the best course for settling the difficulty is suggested. The specimens examined were from Nantucket (*Mrs. Owen*), New Jersey (*Gray, Parker*), Pennsylvania (*Porter*), Virginia (*Curtiss, Dana*), S. Illinois (*Vasey*), W. Tennessee (*Fendler*), E. Arkansas (*Harvey*, 52), E. Texas (*Hall*, 36 in part).

3. **A. hypericoides** L. Taller (1 to 2 feet), more erect, branched above: leaves linear to linear-oblong, 3 to 10 lines long, a line or two wide, conspicuously biglandular at base: pedicels longer: outer sepals usually narrower, often acute.—Spec. ed. 1, 788, as to Plum. syn., ed. 2, 1108, excl. Pluk. syn.; Chois. in DC. Prodr. i. 555, in part; Griseb. Fl. Brit. W. Ind. 112.

A. Crux-Andreæ Torr. & Gray, Fl. i. 156, in part; Griseb. Plant. Cub. 40 Chapm. Fl. 38; indeed of all southern authors.

A. Crux-Andreæ var. *angustifolium* Nutt. Gen. ii. 16; Torr. & Gray, Fl. 1. 156.

A. Plumieri Bertol. Bot. Misc. xiii. 19, t. 3, f. 3.

South Carolina to Florida, Louisiana, and Texas. Also in the Bermudas, W. Indies, and Mexico.

Much uncertainty has arisen from attempting to reduce A. hypericoides to a form of A. Crux-Andreæ, but the larger more branching habit, narrower leaves with conspicuous basal glands, as well as a decidedly more southern range, serve to distinguish it. The Bermuda and Jamaica plants are typical forms of the species, and can by no means be taken for forms of A. Crux-Andreæ, but those of the continent are more apt to be perplexing. The specimens examined were from S. Carolina (*Ravenel*), Florida (*Curtiss*, 243), Louisiana (*Drummond*, 90 and 92), Texas (*Hall*, 36 in part, *Lindheimer*), Mexico (*Berlandier*, 989, 2419, *Botteri*, 373), Cuba (*Wright*, 2129), Jamaica (*Alexander*, *Grisebach*, 1497. 811), Bermuda (*Lane*, 331 in part).

** Erect, stouter, a foot or two high: stems simple or branched above, conspicuously two-edged, even winged: leaves broader and thicker, more or less clasping: pedicels 2 to 6 lines long: inner sepals 3 to 6 lines long, sometimes as long as the outer, seldom petaloid: petals mostly much longer than the outer sepals: styles 3 (rarely 4), generally distinct.

4. **A. stans** Michx. Leaves oblong to oval, closely sessile and somewhat clasping, an inch or two long and 5 or 6 lines wide: pedicels bibracteolate near the middle: outer sepals ovate to orbicular-cordate; inner ones lanceolate: styles short.—Fl. ii. 77; Chois. in DC. Prodr. i. 555 (but not "2-styled"); Torr. & Gray, Fl. i. 157; Gray, Gen. Ill. i. 212, t. 91.

A. hypericoides L. Spec. 788, as to Pluk. syn.; Pursh, 373.

Barrens of New Jersey and E. Pennsylvania to Florida, Louisiana, and W. Texas.

In a southern form (var. *obovatum* Chapm.) the lower leaves taper to the base and become almost obovate. The specimens examined were from New Jersey (many collectors), E. Pennsylvania (*Porter*), Florida (*Curtiss*, 244), Louisiana (*Drummond*, 91, also *Hale*, a very large specimen), W. Texas (*Young*).

5. **A. amplexicaule** Michx. Leaves ovate-cordate, often broadly so, clasping, half an inch or more long and nearly as wide: pedicels with very small bractlets near the base or none: outer sepals broadly ovate-cordate, resembling the leaves; inner ones linear-lanceolate: styles about as long as the ovary.—Fl. ii. 77; Torr. & Gray, Fl. i. 157.

A. stans Willd. Spec. iii. 1473.
A. stans var. β Chois. Prodr. Hyper. 61.
A. Cubense Griseb. Plant. Cub. 40 (*Wright*, 2128).
Hypericum tetrapetalum Lam. Dict. iv. 153.

Georgia and Florida. Also in Cuba.

The specimens examined were from Florida (*Buckley*, *Palmer*, *Curtiss*, *Garber*), Georgia, and Cuba (*Wright*, 2128).

2. HYPERICUM Tourn., L. St. John's-wort.

Herbs or shrubs; with cymose yellow flowers; the sessile leaves more or less pellucid-punctate and black-dotted: very variable in size of leaves, sepals, and flowers.—Gen. 902; Torr. & Gray, Fl. i. 157; Gray, Gen. Ill. i. 213, t. 92, 93; Benth. & Hook. Gen. Plant. i. 165, excl. *Elodea*. *Sarothra* L. Gen. 383. *Brathys*, *Brathydium*, *Myriandra*, *Roscyna*, and *Isophyllum* of Spach, Ann. Sci. Nat. 2. v. 367.—A genus of about 160 species, widely distributed, but chiefly of northern temperate regions; all but three of the 29 North American species restricted to the Atlantic U. S.

H. setosum L. Spec. 787, with the character only "floribus digynis, foliis linearibus," represents no plant known to Linnæus, but is a complex wholly founded on a phrase of Gronov. Fl. Virg., which belongs to *H. pilosum* Walt., and to one of Pluk. Alm., which is *H. nudicaule* Walt., whence the "digynis" and the suggestion of the specific name.

H. elatum Ait. Hort. Kew. iii. 104, proves to be *H. hircinum* L., or some nearly related Old World species.

H. triplinerve Vent. Hort. Cels. t. 58, must also be an Old World species, related to *H. hyssopifolium* L.

§1. Sepals and petals 4, or occasionally 5: stamens numerous, distinct styles 3, at first united into a long sharp beak, becoming distinct: capsule 1-celled, the placentæ projecting: branching shrubs.—*Isophyllum* Spach.

1. **H. microsepalum** Gray. Decumbent or erect, half to a foot high or more: leaves very small, oblong-linear, 3 or 4 lines long, hardly a line wide, obtuse: flowers showy, about an inch in diameter, clustered at the summit of the branches: sepals slightly unequal, linear to oblong, mostly obtuse, much shorter than the somewhat unequal petals: capsule oblong-ovate, 2 to 3 lines long; seeds oblong, minutely striate and fitted.—Watson, Bibl. Index, Polypet. 456.

Isophyllum Drummondii Spach, Ann. Sci. Nat. 2. v. 367.

Ascyrum microsepalum Torr. & Gray, Fl. i. 157; Gray, Gen. Ill. i. 212; Chapm. Fl. 39.

Georgia and Florida.

This species is intermediate between Ascyrum and Hypericum, and Spach separated it from both by founding the genus Isophyllum. The habit, small and nearly equal sepals, and long beak-like styles, all belong to Hypericum, while the 4-merous flower associates it with Ascyrum. As the flowers are also sometimes 5-merous it seems most proper to consider it an outlying species of Hypericum.

§2. Stamens very numerous, distinct, or more or less united into sets.

* Styles 5, united below, distinct above; stigmas capitate: capsule 5-celled, the placentæ turned far back from the axis: tall perennial herbs with large leaves and flowers.

2. **H. Ascyron** L. Usually branching above, 2 to 5 feet high: leaves ovate-lanceolate, clasping, mostly acute, 2 to 5 inches long, about an inch wide, pellucid-punctate with elongated dots: flowers an inch or two in diameter, solitary at the ends of branches and in terminal cymes: sepals lanceolate to ovate, acute, 4 to 6 lines long: capsule ovoid-conical, 9 lines long; seeds terete, with slightly winged rhaphe.—Spec. 2 ed. 1102; Maxim. Pl. Nov. Asiat. iv. 162.

H. pyramidatum Ait. Hort. Kew. iii. 103; Torr. & Gray, Fl. i. 158; Gray, Manual, 84.

H. ascyroides Willd. Spec. iii. 1443; Chois. in DC. Prodr. i. 545, Hook. Fl. Bor.-Am. i. 109.

H. macrocarpum Michx. Fl. ii. 82.

From Canada to Vermont, Massachusetts, Connecticut, and E. Pennsylvania, westward to N. Illinois, Iowa, Michigan, Minnesota, the Winnipeg valley, and probably farther northwest. Also throughout northeastern Asia, and in Europe.

Our plant can not be distinguished in any way from the Asiatic, and was included with it in the original Linnæan description ("*Habitat in* Sibiria, Canada, Pyrenæis.") Maximowicz (l. c.) has called attention to the identity of the North American and Asiatic forms, and a careful comparison of specimens has fully confirmed his opinion.

* * Styles united into a long, sharp beak, becoming distinct; stigmas minute, not capitate: more or less shrubby plants.

† Styles 5: capsule 5-celled: bushy shrubs with crowded leaves.

3. **H. Kalmianum** L. A foot or two high: leaves linear to oblanceolate, tapering at base, one or two inches long, 2 to 4 lines wide, pellucid-punctate with round dots, glaucous beneath: cymes few-flowered: sepals lanceolate to oval, half as long as the petals: capsule ovate, about 3 lines long; seeds abruptly and minutely pointed.—Spec. 783; Torr. Fl. N. Y. i. 86, t. 13; Torr. & Gray, Fl. i. 158.

Rocky shores, Canada, Niagara Falls, and about the Great Lakes.

† † Styles 3: capsule completely 3-celled: branching shrubs.

4. **H. Buckleyi** M. A. Curtiss. Low (half to a foot), widely branching from the base: leaves oblong, obtuse, narrowed at base, half to an inch long, 2 to 4 lines wide, paler beneath and more or less black dotted: flowers solitary and terminal, on long peduncles, sometimes in threes, about an inch in diameter: sepals obovate, not half as long as the petals: capsule conical, 4 to 5

lines long: seeds striate, with prominent rhaphe.—Am. Jour. Sci. 1. xliv. 80; Chapm. Fl. 39.

Cliffs, mountains of North Carolina and Georgia.

5. **H. prolificum** L. Leaves linear-lanceolate to narrowly oblong, narrowed at base, mostly obtuse and mucronulate, 1 to 3 inches long, 3 to 9 lines wide, with smaller ones in axillary fascicles: flowers numerous, half to an inch in diameter: sepals unequal, foliaceous, lanceolate to ovate, mucronate, much shorter than the petals: capsule lanceolate to ovate, 4 to 6 lines long; seeds striate.—Mant. 106; Chois. in DC. Prodr. i. 547; Torr. & Gray, Fl. i. 159, excl. var. γ.

H. rosmarinifolium Lam. Dict. iv. 159; Torr. & Gray, l. c.

Myriandra ledifolia Spach, Ann. Sci. Nat. 2. v. 365.

From New Jersey and District of Columbia, to Alabama, Arkansas, Missouri, Kentucky, Illinois, and Minnesota.

This species varies greatly in size, and in width of leaves, the southern forms often approaching the next species in appearance, but readily distinguished by the much larger and fewer capsules and flowers.

6. **H. densiflorum** Pursh. More shrubby and taller, sometimes 5 or 6 feet high, much more branching: leaves more crowded, narrower and shorter: flowers much more numerous and smaller: sepals smaller, not foliaceous: capsule 2 to 3 lines long.—Fl. 376; Chois. l. c.

H. galioides Pursh, 376, not Lam.

H. prolificum var.(?)γ Torr. & Gray, l. c.

H. prolificum var. *densiflorum* Gray, Manual, 84.

Myriandra spathulata Spach, l. c.

Pine barrens of New Jersey, to Florida, Tennessee, Arkansas, and Texas.

Large leaved forms from New Jersey (*Canby*) seem to intergrade with the last species, but the characters of capsules and flowers plainly indicate H. densiflorum. Between closely related species it is to be expected that intermediate forms will occur.

††† Styles 3: capsule 1-celled, or almost 3-celled by the projecting placentæ: shrubby at least at base.

‡ Placentæ projecting nearly to the center of the ovary.

= Sepals broad, ovate, foliaceous: flowers large and showy, solitary or in leafy cymes: leaves rather broad and somewhat coriaceous: shrubby.

7. **H. aureum** Bartram. Widely branched above, 2 to 4 feet high: leaves oblong, more or less attenuate at base, obtuse or acute, 1 to 3 inches long, 3 to 9 lines wide: flowers often solitary,

1 or 2 inches in diameter, very showy: sepals very unequal, often enclosing the capsule: petals orange-yellow, firm, reflexed: stamens excessively numerous: capsule ovate-conical, not lobed, 3 to 5 lines long.—Travels, 383; Torr. & Gray, Fl. i. 161.

H. frondosum Michx. Fl. ii. 81; Chois. in DC. Prodr. i. 544.
H. ascyroides var. β Poir. Suppl. iii. 694.
H. amœnum Pursh, 375; Nutt. Gen. ii. 10; Chois. l. c.
South Carolina and Georgia, to Tennessee, Alabama, and Texas.

Varies much in the size of its leaves and sepals, the mountain forms usually having smaller leaves.

8. **H. myrtifolium** LAM. More or less branching: leaves cordate-oblong, clasping, obtuse, half to an inch long, 3 to 6 lines wide, those of the cyme much smaller: flowers not an inch in diameter, in compound cymes: sepals resembling the leaves, larger than the floral bracts, often reflexed: capsule as in the last, but coriaceous and 3 or 4-lobed or angled.—Dict. iv. 180; Chois. l. c. 547; Torr. & Gray, l. c. 162.

H. glaucum Michx. Fl. ii. 78; Chois. l. c.
H. rosmarinifolium Chois. l. c., not Lam.
H. sessiliflorum Willd. Spreng. Syst. iii. 346; Torr. & Gray, l. c. 166.
From South Carolina to Florida and Alabama.

= = Sepals small, very narrow: flowers small, axillary and terminal: leaves narrow and much fascicled in the axils: shrubby and branching.

9. **H. fasciculatum** LAM. One to three feet high: leaves very narrowly linear and revolute, coriaceous, crowded, closely sessile, not tapering at base, usually with a line of large pellucid glands upon each revolute edge, 2 to 8 lines long: sepals resembling the leaves, shorter than the petals: capsule 3-lobed, oblong- to ovate-conical, few-seeded, a line or two long.—Dict. iv. 160; Chois. in DC. Prodr. i. 554; Torr. & Gray, Fl. 160.

H. nitidum Lam. l. c.
H. aspalathoides Willd. Spec. iii. 1451; Pursh, 376.
H. fasciculatum var. *aspalathoides* Torr. & Gray, l. c. 672.
Myriandra nitida, brachyphylla, and *galioides* of Spach.
Wet pine barrens, from North Carolina to Florida, Louisiana, and E. Texas.

Very variable in length and fasciculation of leaves. Lamarck's original specimen is our short-leaved form (var. *aspalathoides*), while his *H. nitidum* is a loose, long-leaved form, approaching some forms of the next species.

10. **H. galioides** LAM. Like the last, but leaves longer and broader, linear-lanceolate to oblanceolate, generally mucronate,

always tapering and subpetiolate at base, not so revolute, half to three inches long, as many lines wide: sepals linear-lanceolate, acute, tapering at base, shorter or longer than the petals.—Dict. iv. 161; Chois. l. c. 550; Torr. & Gray, Fl. i. 159.

H. axillare Lam. l. c. 160, not Michx.
H. fasciculatum Michx. Willd. Spec. iii. 1452, not Lam.
? *H. ambiguum* Elliott, ii. 30; Torr. & Gray, l. c. 162 and 673.
H. galioides var. *ambiguum* Chapm. Fl. 40.
Myriandra Michauxii Spach.
Wet ground, from Delaware to Georgia, E. Tennessee, and Louisiana.

These two species are inextricably connected by intermediate forms, and it is a question whether H. *galioides* should be considered more than a variety of *H. fasciculatum.* But the extreme forms are so remarkably different in appearance that for the present, at least, they are kept separate.

= = = Sepals small: flowers small, in naked cymes: leaves rather broad, thin and veiny: somewhat shrubby at base, a foot or two high, simple or branching.

11. **H. adpressum** BARTON. Leaves linear-lanceolate to narrowly oblong, mostly acute, ascending, about two inches long, 3 to 4 lines wide, revolute, pellucid-punctate without black dots, translucently veiny: cymes leafy only at base, dichotomal flowers very short pedicelled: sepals linear to lanceolate, acute, half to two-thirds as long as the petals, often reflexed: capsule ovate to oblong, about 2 lines long; seeds oblong.—Fl. Philad. ii. 15; Torr. & Gray, Fl. i. 159.

H. Bonapartecæ Barton, Fl. N. Am. iii. 95, t. 106.
H. fastigiatum Elliott, ii. 31; Torr. & Gray, l. c. 166.
H. adpressum var. *fastigiatum*, Torr. & Gray, l. c. 673.
Moist ground, Nantucket to Rhode Island, New Jersey, Pennsylvania, and Georgia.

12. **H. cistifolium** LAM. Leaves ovate-lanceolate or oblong, obtuse, 2 or 3 inches long, half an inch wide, pellucid-punctate with very small crowded dots: cymes pedunculate, loosely-flowered, dichotomal flowers pedicelled: sepals variable, linear to oblong, about half as long as the petals: capsule ovate-conical, about 3 lines long; seeds cylindrical, with prominent rhaphe.—Dict. iv. 158, not of Torr. & Gray, Fl. i. 674, Chapm. Fl. 41, etc.

H. nudiflorum Michx. Willd. Spec. iii. 1456; Torr. & Gray, l. c. 162; Chapm. l. c.; Gray, Manual, 84.
From North Carolina through Georgia and Alabama to Texas.

As our *H. nudiflorum* has proved to be Lamarck's *H. cistifolium,* the latter name as applied in Watson's Bibliographical Index, p. 125, must disappear.

This leaves, as the oldest unoccupied name, *H. opacum* of Torrey & Gray, which accordingly reappears as a specific name.

‡‡ Placentæ projecting a little, or not at all: sepals unequal.

= Leaves mostly linear, with rather large and scattered pellucid dots: flowers in somewhat leafy-bracted cymes: capsule conical or globose; seeds large, oval, strongly rugose transversely.

13. **H. sphærocarpum** Michx. Simple or branched, 1 to 3 feet high: leaves linear to narrowly oblong, mostly obtuse, 2 to 3 inches long, 3 to 6 lines wide: cyme loosely-flowered, dichotomal flower mostly sessile: sepals varying from small and linear to ovate and as long as the petals: capsule from depressed globose to ovoid, about 2 lines long; rhaphe almost winged.—Fl. ii. 78; Torr. & Gray, Fl. i. 163.

Rocky banks of the Ohio and its tributaries, southward to Arkansas.

This stands as a very good species, easily distinguished from any likely to be confounded with it, by its strictly one-celled capsule and large very rough seeds. In fact, the seeds are the most characteristic ones of the genus. By some mistake the specific name has been often written *H. sphærocarpon*, while the original name is as above.

14. **H. dolabriforme** Vent. Low, straggling, 6 to 18 inches high: leaves linear to linear-lanceolate, widely spreading, about an inch long, a line or two wide, mostly acute: cyme few-flowered, dichotomal flower pedicelled: sepals large and foliaceous, lanceolate to ovate, acute or acuminate, as long as the petals: capsule ovate-conical, almost triquetrous, about 3 lines long, coriaceous. —Hort. Cels. t. 45; Pursh, 378; Chois. in DC. Prodr. i. 547; Torr. & Gray, Fl. i. 162.

H. procumbens Desf. Willd. Spec. iii. 1450; Michx. Fl. ii. 81; Pursh, 379; Chois. l. c.

Dry hills, Kentucky and Tennessee.

= = Leaves oblong, obtuse: flowers in nearly naked cymes: capsule ovate; seeds oblong, minutely striate and pitted.

15. **H. opacum** Torr. & Gray. One to four feet high: leaves linear oblong, about an inch long, 2 to 4 lines wide, closely sessile, pellucid-punctate with minute crowded dots: flowers 3 to 5 lines in diameter, in divaricate cymes, the dichotomal flowers mostly sessile: sepals oblong to obovate, about half as long as the bright yellow petals: capsule 2 to 3 lines long.—Fl. i. 163.

H. punctulosum Bertol. Bot. Misc. xiii. 18, t. 3, f. 2.

H. cistifolium Watson, Bibl. Index, Polypet. 125, not Lam.

South Carolina to Georgia, Florida, and Mississippi.

16. **H. ellipticum** Hook. Mostly herbaceous, 10 to 20 inches high: leaves elliptical-oblong, sessile or tapering at base, ½ to 1½ inches long, 3 to 5 lines wide, pellucid-punctate, with large scattered dots, translucently veiny: flowers 4 to 6 lines in diameter, in few-flowered cymes, the dichotomal flowers pedicelled: sepals mostly foliaceous and spreading, oblanceolate to narrowly obovate, usually shorter than the pale yellow petals: capsule as in the last.—Fl. Bor.-Am. i. 110; Torr. & Gray, Fl. i. 164.

H. sphærocarpum Barton, Fl. Philad. ii. 14, not Michx.

In moist ground, from Canada to Pennsylvania, westward to the Winnipeg valley.

Origin of the Flora of Indiana.

HARVEY THOMSON.

In an article of this nature it would not be advisable or necessary to enter into the details of the argument t prove that the original birthplace of our present flora is in the far north, near or even beyond the Arctic circle.

The origin of our present flora and the causes producing its present distribution present a rich field for thought and theory both to botanists and geologists, as the establishment of this theory of the northern origin of plants determines the temperature and climate of those regions in past geological periods. Many of the best thinkers of the botanical world have very ably discussed this subject in their writings. Noticeable among these are Dr. Asa Gray, Sir Joseph Hooker, Sir W. Dawson, De Candolle, Darwin, Wallace, Lesquereux, and others. Dr. Asa Gray first advanced his theory, before anything was known of the fossil life of the high northern latitudes, based upon the striking resemblances between eastern Asiatic and eastern American floras. The other writers have based their theories and conclusions upon the identity of many fossil plants, found in the cretaceous rocks of Greenland and the extreme northern part of the continent, with those of temperate latitudes of both America and Asia. These fossil plants were found by Dr. Lyall, Sir John Richardson and Sir Alexander Armstrong, and determined by Prof. Heer, of Zurich. There can, therefore, be no doubt as to the identity of these plants and, consequently, as to the origin of our temperate flora or the climate of those regions in the periods preceding the tertiary, as it is conceded that plants become acclimatized very slowly, if ever. During the glacial epoch these plants